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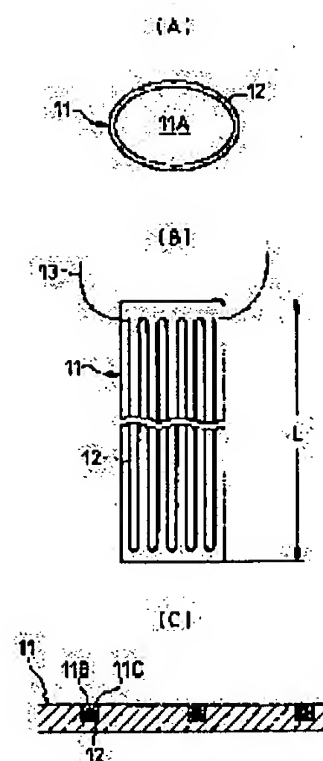
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## (54) LIQUID FILLING METHOD

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To prevent a fluid flow path used for filling a liquid from being clogged by heating the flow path for use in a liquid filling method.

**SOLUTION:** A liquid filling apparatus 10 fills a high temperature liquid (a liquid comprising a material which solidifies at an ordinary temperature) which is pressure-fed from a tank by a pump into a container 1 by a filling nozzle 11. The nozzle 11 has a heating wire 12 (heating means) embedded along a full length L of its flow path 11A to allow the path 11A to be heated. That is, the flow path 11A of the filling nozzle 11 is heated by the heating wire 12 for use. Therefore, even if supply of the high temperature liquid is stopped by interruption of filling or the like, the flow path 11A does not lower in temperature, so that the liquid attaching to the vicinity of an exit of the flow path 11A may not solidify nor the liquid left in the flow path 11A may solidify, resulting in no clogging in the nozzle 11. In addition, by heating the flow path 11A only when the liquid does not flow, deterioration in liquid quality due to overheat of the flow path 11A while the liquid flows can be avoided.



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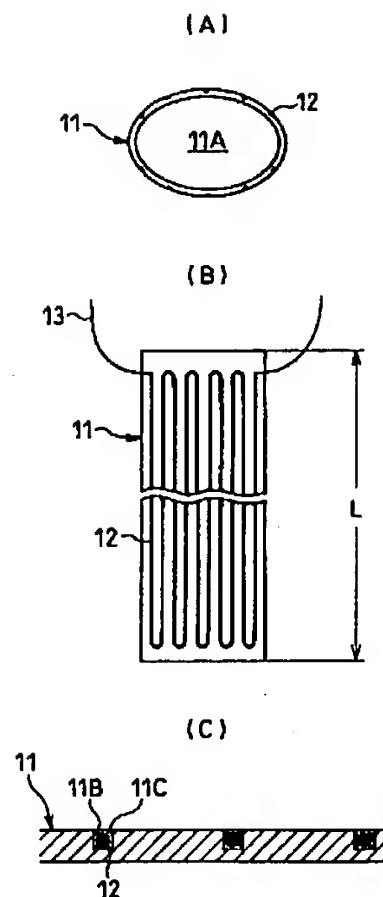
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(54)【発明の名称】 液体充填方法

(57)【要約】

【課題】 液体の充填に用いられる流路のつまりを防止すること。

【解決手段】 液体充填方法において、液体流路11Aを加熱して用いるもの。



## 【特許請求の範囲】

【請求項1】 液体流路を加熱して用いる液体充填方法。

【請求項2】 液体が常温で固化する物質からなる請求項1記載の液体充填方法。

【請求項3】 液体の非流通時に液体流路を加熱する請求項1又は2記載の液体充填方法。

【請求項4】 液体流路に加熱手段を付帯してなる液体充填ノズル。

【請求項5】 加熱手段をノズルの壁面に埋め込んだ液体充填ノズル。

## 【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は油脂製品、石鹸等のための液体充填方法及び液体充填ノズルに関する。

【0002】

【従来の技術】従来、常温で固化する液体を充填ノズル等を用いて充填する充填装置では、充填の中断等の際して高温液体の供給が止まると、充填ノズル等が低温になり、ノズルの流路の出口の周辺に付着した液体が固化し、或いはノズルの流路の中に留められた液体が固化する等により、ノズルのつまりを生じ易い。

【0003】尚、液体充填ノズルの流路の出口に溶剤を供給して該流路の出口における液体の付着固化を防止するもの（特開平6-170292）があるが、溶剤を供給する複雑な構成を必要とする他、流路の内部でのつまりは防止できない。また、液体供給管に2つの充填ノズルを並列に接続し、それら2つのノズルを交互に用いることにより、液体供給管の流れを止めないようにしてつまりを防止するもの（特公昭51-45265）があるが、液体供給管のつまりを充填の停止時には防止できないし、ノズルのつまりは防止できない。

【0004】

【発明が解決しようとする課題】本発明の課題は、液体の充填に用いられる流路のつまりを防止することにある。

【0005】

【課題を解決するための手段】請求項1に記載の本発明に係る液体充填方法は、液体流路を加熱して用いるようにしたものである。

【0006】

【発明の実施の形態】液体充填装置10は、図1に示す如く、不図示のタンクから不図示のポンプにより圧送されてくる高温液体（常温では固化する物質からなる液体）を充填ノズル11により容器1に充填する。尚、容器1に充填された液体は、その後凝固点以下の常温に降温し、容器1内で固化する。

【0007】然るに、充填ノズル11は、図2に示す如く、その流路11Aの全長Lに渡り、ニクロム線等の電熱線12（加熱手段）を埋設され、流路11Aを加熱可

能としている。電熱線12は、ノズル11の外周面に連続するように設けた溝11Bに埋設され、接着剤11Cで固定化される。このとき、充填ノズル11が金属等の通電性材料からなるときには、電熱線12もしくは溝11Bに電気絶縁処理を行なう。他方、充填ノズル11がセラミック等の非通電性材料からなるときには、電熱線12、溝11Bに電気絶縁処理は必要ない。尚、電熱線12は、溶融金属を溝11Bに流し込んで溝11Bに埋設されるものであっても良い。

【0008】また、充填ノズル11に埋設した電熱線12は、給電線13を介して不図示の通電制御装置に接続される。これにより、充填ノズル11の表面温度を検出し、この検出温度に応じて電熱線12への通電タイミング、通電電力を制御でき、電熱線12は必要なタイミングで、必要な温度に加熱されてノズル11の流路11Aを加熱する。このようにすることで、消費電力を節約できる。また、表面温度を検出せずに、目標温度に達する電圧を予測して、一定電圧を常時加えるという方法も考えられる。例えば、電熱線12は、液体の非流通時ににおいてだけ流路11Aを加熱するものであっても良い。

【0009】従って、本実施形態によれば、以下の作用がある。

（請求項1、2、3に対応する作用効果）

①液体充填ノズル11の流路11Aが電熱線12により加熱されて用いられる。従って、充填の中断等により高温流体の供給が止まっても、その流路11Aが低温にならず、流路11Aの出口の周辺に付着した液体が固化することがなく、また流路11Aの中に留められた液体も固化せず、ノズル11のつまりを生じない。

【0010】液体充填ノズル11は、通常、細くて長いので、大気中での放熱により冷えて液体の固化を生じ易い。更に、本実施形態の充填ノズル11は、容器1の開口部に挿入して充填に供され、その充填終了時には容器1の開口部から引抜かれるから、その引抜き時の大気中での放熱により冷えて液体の固化を生じ易い。ところが、本実施形態では、充填ノズル11に電熱線12を付帯したため、上述①により、液体の固化を確実に防止できる。

【0011】（請求項4に対応する作用効果）

②上述①の流路11Aの加熱を液体の非流通時にのみ行なうことにより、液体の流通時の流路11Aのオーバーヒートによる液体品質の劣化を回避できる。

【0012】また、本実施形態では、充填ノズル11の加熱手段として電熱線12を採用したので、下記③～⑤の作用がある。

【0013】③電熱線12をノズル11の溝11Bに埋設した結果、ノズル11の外面に電熱線12を巻付けるときのような凹凸がなく、このノズル11を容器1の開口部に挿入して用いるとき、容器1の開口部の内面を擦過せず、容器1の開口部と電熱線12の電気絶縁被覆の

双方にキズを付けない。

【0014】④充填ノズル11の溝11Bに電熱線12を埋設したから、ノズル11に一定の強度と剛性を確保しながら、ノズル11の肉厚をそれほど増加させず加熱手段を付帯できた。ノズル11の肉厚を増加させないことは、ノズル11の熱容量を小として加熱応答性を向上できること、ノズル11の外径に対し内径をできるだけ大きくすることにより液体の流速を遅くして充填時の泡の発生を抑えることができ、製品の品質を向上できる。

【0015】⑤加熱手段としては、熱線（赤外線、近赤外線等）（熱源を別設置）をノズル11に放射する方法、ノズル11を誘導加熱する方法（コイルを熱設置）等も採用できるが、電熱線12を採用したことにより、

ノズル11の内部にコンパクトに加熱手段を装備でき、また温度調節も簡易となる。

【0016】

【発明の効果】以上のように本発明によれば、液体の充填に用いられる流路のつまりを防止することができる。

【図面の簡単な説明】

【図1】図1は液体充填装置を示す模式図である。

【図2】図2は液体充填ノズルに付帯した電熱線を示す模式図である。

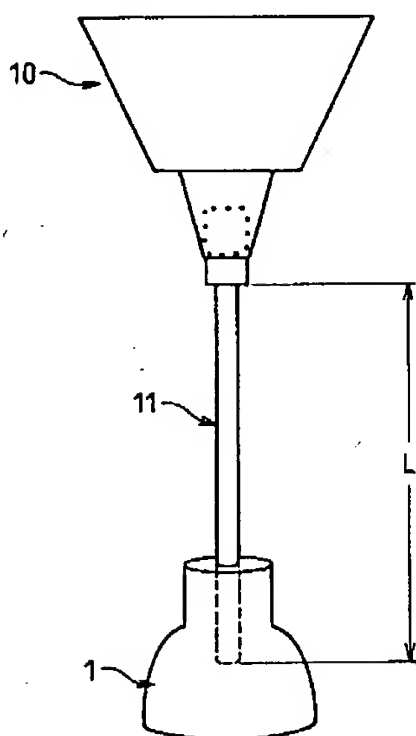
【符号の説明】

10 液体充填装置

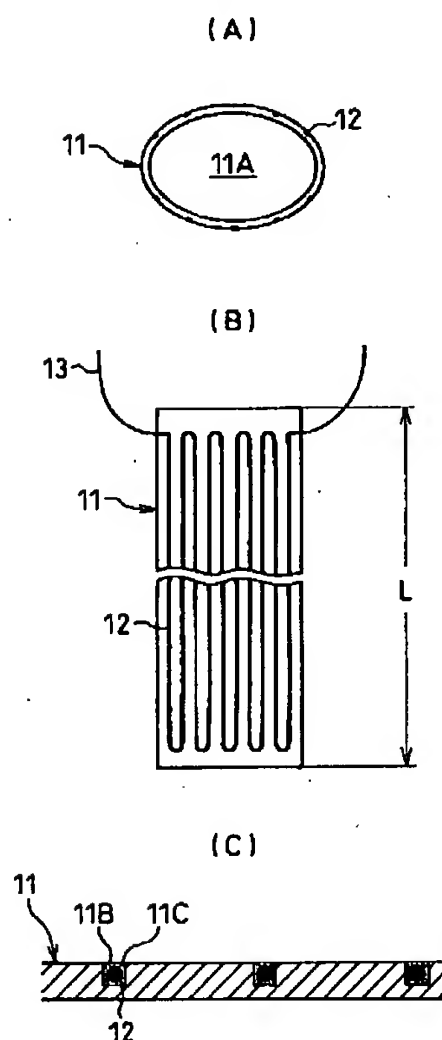
11 充填ノズル

12 電熱線（加熱手段）

【図1】



【図2】



**\* NOTICES \***

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**CLAIMS**

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[Claim(s)]

[Claim 1] A liquid restoration method of heating and using liquid passage.

[Claim 2] A liquid restoration method according to claim 1 that a liquid consists of material solidified in ordinary temperature.

[Claim 3] A liquid restoration method according to claim 1 or 2 of heating liquid passage at the time of un-circulating [ of a liquid ].

[Claim 4] A liquid restoration nozzle which comes to attach to liquid passage in a heating means.

[Claim 5] A liquid restoration nozzle which embedded a heating means on a wall surface of a nozzle.

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DETAILED DESCRIPTION

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## [Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the liquid restoration method and liquid restoration nozzle for a fats-and-oils product, soap, etc.

[0002]

[Description of the Prior Art] It is easy to produce \*\*\*\*\* of a nozzle by the liquid which the restoration nozzle etc. became low temperature and the liquid which adhered around the outlet of the passage of a nozzle solidified with it conventionally when supply of an elevated-temperature liquid stopped on the occasion of interruption of restoration etc. at the restoration equipment filled up with the liquid solidified in ordinary temperature using a restoration nozzle etc., or was stopped in the passage of a nozzle solidifying etc.

[0003] in addition -- although there are some (JP,6-170292,A) which supply a solvent to the outlet of the passage of a liquid restoration nozzle, and prevent adhesion solidification of the liquid in the outlet of this passage, and also it needs the complicated configuration which supplies a solvent -- the interior of passage -- getting it blocked -- it cannot prevent. moreover -- although there are some (JP,51-45265,B) which prevent \*\*\*\*\* by connecting two restoration nozzles to a liquid supply pipe at juxtaposition, and using these two nozzles by turns as do not stop the flow of a liquid supply pipe, \*\* it cannot prevent \*\*\*\*\* of a liquid supply pipe at the time of a halt of restoration -- a nozzle -- getting it blocked -- it cannot prevent.

[0004]

[Problem(s) to be Solved by the Invention] The technical problem of this invention is to prevent \*\*\*\*\* of passage used for restoration of a liquid.

[0005]

[Means for Solving the Problem] A liquid restoration method concerning this invention according to claim 1 heats liquid passage, and it is used for it.

[0006]

[Embodiment of the Invention] Liquid restoration equipment 10 fills up a container 1 with the elevated-temperature liquid (liquid which consists of material solidified in ordinary temperature) fed with a non-illustrated pump from a non-illustrated tank by the restoration nozzle 11, as shown in drawing 1. In addition, the liquid with which the container 1 was filled up is lowered in the ordinary temperature below the congealing point after that, and is solidified within a container 1.

[0007] being appropriate -- it is alike, and as shown in drawing 2, over the overall length L of the passage 11A, the restoration nozzle 11 has the heating wire 12 (heating means), such as a nichrome wire, laid underground, and is enabling heating of passage 11A. Heating wire 12 is laid under the slot 11B prepared so that the peripheral face of a nozzle 11 might be followed, and is fixed by adhesives 11C. When the restoration nozzle 11 consists of energization nature materials, such as a metal, at this time, electric insulating treatment is performed to heating wire 12 or slot 11B. On the other hand, when the restoration nozzle 11 consists of un-energizing nature materials, such as a ceramic, electric insulating treatment is unnecessary to heating wire 12 and slot 11B. In addition, heating wire 12 slushes molten metal into slot 11B, and may be laid under the slot 11B.

[0008] Moreover, the heating wire 12 laid under the restoration nozzle 11 is connected to a non-illustrated energization control unit through a feeder 13. By this, the skin temperature of the restoration nozzle 11 is detected, the energization timing to heating wire 12 and energization power can be controlled according to this detection temperature, and heating wire 12 is required timing, it is heated by required temperature and heats passage 11A of a nozzle 11. Power consumption can be saved by doing in this way. Moreover, the voltage which reaches aim temperature is predicted without detecting skin temperature, and the method of always applying fixed voltage is also considered. For example, heating wire 12 may heat passage 11A at the time of un-circulating [ of a liquid ].

[0009] Therefore, according to this operation gestalt, there are the following operations.

(The operation effect corresponding to claims 1, 2, and 3)

\*\* Passage 11A of the liquid restoration nozzle 11 is heated with heating wire 12, and is used. Therefore, even if supply of a high-temperature fluid stops by interruption of restoration etc., the passage 11A does not become low temperature, the liquid which the liquid which adhered around the outlet of passage 11A did not solidify, and was stopped in passage 11A is not solidified, either, and \*\*\*\*\* of a nozzle 11 is not produced.

[0010] Since the liquid restoration nozzle 11 is thin and usually long, it gets cold by thermolysis in atmospheric air, and tends to produce solidification of a liquid. Furthermore, since the restoration nozzle 11 of this operation gestalt is inserted in opening of a

container 1, and restoration is presented with it and it is drawn out from opening of a container 1 at the time of the restoration termination, it gets cold by thermolysis in the atmospheric air at the time of the drawing, and tends to produce solidification of a liquid. However, with this operation gestalt, since heating wire 12 was attached to the restoration nozzle 11, solidification of a liquid can be certainly prevented by the above-mentioned \*\*.

[0011] (The operation effect corresponding to claim 4)

\*\* By heating passage 11A of the above-mentioned \*\* only at the time of un-circulating [ of a liquid ], deterioration of the liquid quality by overheat of passage 11A at the time of circulation of a liquid is avoidable.

[0012] Moreover, with this operation gestalt, since heating wire 12 was adopted as a heating means of the restoration nozzle 11, there is an operation of the following \*\* - \*\*.

[0013] \*\* There is no irregularity like [ as a result of laying heating wire 12 under the slot 11B of a nozzle 11 / when twisting heating wire 12 around the external surface of a nozzle 11 ], and when inserting and using this nozzle 11 for opening of a container 1, don't scrape the inside of opening of a container 1 and don't attach a crack to opening of a container 1, and the both sides of electric insulation covering of heating wire 12.

[0014] \*\* Securing fixed reinforcement and rigidity to a nozzle 11, since heating wire 12 was laid under the slot 11B of the restoration nozzle 11, thickness of a nozzle 11 was not made to increase so much, but the heating means has been attached. That heating responsibility can be improved by making the heat capacity of a nozzle 11 into smallness, and by enlarging a bore as much as possible to the outer diameter of a nozzle 11, not making thickness of a nozzle 11 increase can make the rate of flow of a liquid late, it can suppress generating of the bubble at the time of restoration, and can improve the quality of a product.

[0015] \*\* Although the method of emitting heat rays (infrared radiation, near infrared ray, etc.) (it being another installation about a heat source) to a nozzle 11, the method (it is heat installation about a coil) of carrying out induction heating of the nozzle 11, etc. are employable as a heating means, by having adopted heating wire 12, a compact can be equipped with a heating means inside a nozzle 11, and temperature control also becomes simple.

[0016]

[Effect of the Invention] According to this invention, \*\*\*\*\* of passage used for restoration of a liquid can be prevented as mentioned above.

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[Translation done.]